

## **SECTION 075324**

### **FULLY-ADHERED EPDM (90-MIL) ROOFING SYSTEM**

#### **PART 1 - GENERAL**

##### **101. EXTENT**

- 101.1 The intent of this specification is to define the minimum requirements for a total system premium high performance insulated fully-adhered EPDM (90-mil) single-ply roof membrane systems in accordance with the design drawings, the technical data and as herein specified.
- 101.2 The CONTRACTOR shall be fully responsible for the design of the roof system above the deck.
- 101.3 The roofing systems work by the CONTRACTOR shall include the design, fabrication, furnishing, delivering, unloading and erection of nailers, edge treatment, vapor retarder, insulation, EPDM membrane, and walkway pads indicated on the design drawings and as required by the manufacturer's system including all necessary flashing, fasteners and adhesives.
- 101.4 In addition, the CONTRACTOR shall include all related items of work as noted herein or indicated on the drawings or otherwise required to complete the specified elements of work and provide the necessary warranties for this work. The intent of this specification is to provide a manufacturer's system intended for a 30-year system warranty.
- 101.5 All flashing and sheet metal work (not included in this specification) associated with the design, fabrication and furnishing of the EPDM roofing system shall conform to the requirements of Section 076000.

##### **102. REFERENCE DOCUMENTS**

- 102.1 Standards, specifications, manuals, codes and other publications of nationally recognized organizations and associations are referenced herein. Methods, equipment and materials specified herein shall comply with the specified and applicable portions of the referenced documents, in addition to federal, state or local codes having jurisdiction.
- 102.2 References to these documents are to the latest issue date of each document, unless otherwise indicated, together with the latest additions, addenda, amendments, supplements, etc., thereto, in effect as of the date of Contract for the Work. Abbreviations listed indicate the form used to identify the reference document in the specification text.
- 102.3 ASTM - ASTM International:
  - a. Applicable standards referenced in manufacturer's product literature.
- 102.4 FM - Factory Mutual Global:
  - a. FM Construction Data Sheets 1-28, 1-29 and 1-52.

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- 102.5 NFPA - National Fire Protection Association:
  - a. NFPA 251 - Standard Methods of Fire Tests of Building Construction and Materials.
  - b. NFPA 256 - Standard Methods of Fire Tests of Roof Coverings.
- 102.6 NRCA - National Roofing CONTRACTORs Association.
  - a. NRCA Roofing and Waterproofing Manual.
- 102.7 SMACNA - Sheet Metal and Air Conditioning CONTRACTORs' National Association:
  - a. SMACNA Architectural Sheet Metal Manual.
- 102.8 UL - Underwriters Laboratories, Inc.:
  - a. Building Materials Directory.
  - b. UL 263 - Fire Test of Building Construction and Materials.
  - c. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
  - d. UL 1256 - Fire Test of Roof Deck Construction.
- 103. SUBMITTALS
- 103.1 Submit the following drawings and data in accordance with the requirements of Section I – Contract Drawing and Data Requirements, to the DISTRICT for review:
  - a. Bill(s) of Material Listing.
  - b. Manufacturer's Data.
  - c. Installation Instructions and Details.
- 103.2 The CONTRACTOR shall submit to the DISTRICT Manufacturer's material Certifications of Compliance (COC) and/or Certified Mill Test Reports (CMTR) that materials meet or exceed specified requirements. Certifications shall be submitted with delivery of materials to the Project Site.
- 104. WARRANTY
- 104.1 The CONTRACTOR shall provide 30-year warranty covering workmanship and materials for the total system installation. Warranty shall cover repair of any leak in the roofing system caused by the ordinary wear and tear of the elements, membrane punctures, ordinary rooftop service traffic, hail up to 2" diameter, winds up to 100 mph, manufacturing defect in materials, and the workmanship used to install these materials.
- 104.2 The warranty shall have no dollar limitation and shall include membrane, roof insulation, membrane accessories and metal edging.
- 105. CONSTRUCTION QUALITY CONTROL
- 105.1 The CONTRACTOR's roofing installer shall have a minimum of five years of industrial enclosure experience.

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- 105.2 The CONTRACTOR shall be responsible for inspection work as required or as needed.
- 105.3 Any work found defective or not in compliance with these specifications will be rejected and shall be replaced at no additional cost to the DISTRICT.
- 105.4 Work shall conform to the requirements of the manufacturer of the roofing system selected and requirements in the NRCA Roofing and Waterproofing Manual unless otherwise indicated.
- 105.5 CONTRACTOR will observe all published safety policies and practices relating to application of roofing system and related work.
- 105.6 Material shall be certified as meeting the requirement specified herein and those of the manufacturer's literature.
- 106. DELIVERY, STORAGE AND HANDLING
- 106.1 The material shall be prepared for shipment in such a manner that quality and cleanliness will be maintained during shipment. All materials shall be adequately protected against damage during shipment.
- 106.2 Deliver material to the Project Site or as specified by the DISTRICT at such intervals to ensure uninterrupted progress of the Work.
- 106.3 Store material to permit easy access for inspection and identification. Keep material that is temporarily stored outdoors off the ground, using pallets, platforms or other supports, and protect from deterioration with waterproof covers. Surfaces of material contaminated with foreign elements shall be cleaned prior to installation.
- 106.4 Deliver material in manufacturer's original containers/packaging, dry, undamaged, with seals and labels intact.
- 106.5 Materials shall be stored in a dry location prior to application.
- 106.6 Roofing membranes shall be stored in closed vans or indoor storage in such a way to prevent their becoming deformed or damaged.
- 106.7 Keep all combustible materials away from ignition sources.
- 106.8 System components that are damaged shall be replaced at the CONTRACTOR's expense.

## **PART 2 - PRODUCTS**

- 201. ACCEPTABLE MANUFACTURERS AND PRODUCTS
- 201.1 CONTRACTORS shall use acceptable manufacturers and products as indicated in the specification or as approved by the DISTRICT. Acceptable manufacturers of the materials and products include only companies with good track records in the industry.
- 201.2 The following are acceptable manufacturers:
  - a. Carlisle SynTec Incorporated, Carlisle, PA 17013.
  - b. Firestone Building Products, Indianapolis, IN 46240.

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- 201.3 The following total roof systems are acceptable:
- a. Carlisle Sure-Seal Fully Adhered Roofing System 30-year Golden Seal Total System Warranty.
  - b. Firestone RubberGard Platinum 30-year Warranty Fully Adhered EPDM Membrane System.
- 201.4 Each material shall be the product of one manufacturer. Interchanging different products is not permitted.
202. MATERIAL
- 202.1 All roofing materials by the CONTRACTOR shall conform to the requirements of the manufacturer's requirements for the total roofing system and warranty and additional requirements herein.
203. SYSTEM COMPONENTS
- 203.1 Roof Membrane: Black colored, non-reinforced, cured, 90-mil, synthetic single-ply membrane composed of Ethylene Propylene Diene Termolymer (EPDM) conforming to the manufacturer's published physical properties.
- 203.2 Insulation:
- a. Provide closed cell polyisocyanurate foam core composite board having a laminated oriented strand board (OSB) for the top insulation surface conforming to the manufacturer's published physical properties.
  - b. Provide closed cell polyisocyanurate foam core board for tapered insulation conforming to the manufacturer's published physical properties.
- 203.3 Recovery Board: Provide fiberboard recovery board conforming to the manufacturer's published physical properties only if required for the roofing system.
- 203.4 Vapor Retarder: Provide roof manufacturer's standard membrane conforming to the manufacturer's published physical properties.
- 203.5 Fastenings:
- a. Fasteners, primers, adhesives, sealer, plates and batten strips shall be the manufacturer's standard materials for the roofing system specified.
  - b. Mechanical fasteners shall not be used for precast concrete decks without the prior approval of the deck supplier.
- 203.6 Wood Nailers: Wood nailers shall be structural grade pressure treated for rot and fire resistance conforming to all building code, FM and UL requirements.
- 203.7 Roof Walkway Pads: Roof surface walkway pads shall be the manufacturer's standard nominal 30" x 30" adhesive applied EPDM pads having a non-slip surface.
- 203.8 Flashing: Metal flashing where provided with the roofing system shall be 22-gauge galvanized steel. Where exposed to view, flashing shall be coated with a Kynar finish in a color selected by the DISTRICT.

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- 203.9 Penetration Flashing: Penetrating building components, (supports, vents, conduits, piping, and appurtenances) may be flashed using membrane flashing, pre-fabricated boot products or pitch pan assemblies at the CONTRACTOR's discretion and as recommended by the roofing system manufacturer to provide the best solution for each specific condition.

### **PART 3 - EXECUTION**

#### 301. ROOF SYSTEM PERFORMANCE DESIGN

- 301.1 Design shall satisfy the requirements of ASCE-7 with wind loads based on basic wind speeds at 50-year mean recurrence interval.
- 301.2 The roof system shall have a UL Class A fire hazard classification.
- 301.3 The roof system shall have a FM 1-90 roof assembly classification.
- 301.4 Thermal Transmission - The total U-factor for the roof system shall not be greater than 0.05 BTU/hr-sf-°F or the maximum value for the authority having jurisdiction.

#### 302. EXAMINATION

- 302.1 CONTRACTOR shall examine roof deck to determine that it is sufficiently rigid to support roofing operation and that deflection will not strain or rupture roof components.
- 302.2 CONTRACTOR shall examine the areas and conditions under which the work is to be installed and notify the DISTRICT in writing of conditions detrimental to the proper and timely completion of the Work.
- 302.3 Verify that concrete decks are fully cured to the satisfaction of the roofing system manufacturer.
- 302.4 Verify that surfaces and site conditions are clean, dry, smooth, and free of sharp edges, fins, loose or foreign materials, oil, grease and other materials that may damage the membrane. All roughened surfaces, which could cause damage, shall be properly repaired before proceeding.
- 302.5 Examine roof substrate to verify that it is uniform and properly sloped to drains as indicated on the Design Drawings.
- 302.6 Verify that roof openings, equipment support legs, curbs, pipe sleeves, hatches, vents, and appurtenances are in place and solidly anchored to the deck.
- 302.7 Proceeding with installation means that the roofing installer accepts the substrate.

#### 303. INSTALLATION

- 303.1 Install roofing system only when surfaces are clean, dry, smooth and free of snow and ice. Do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application, following the manufacturer's technical specification.
- 303.2 Wood Nailers:
- a. Wood nailer thickness shall match the total thickness of insulation being used and shall be installed with a 1/8" gap between each length and at each change of direction.

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- b. Mechanically fasten wood nailers shall resist a force of 200 lbs. per linear foot.
- 303.3 Vapor Retarder:
  - a. Install according to the roofing system manufacturer's instruction and the NRCA Roofing and Waterproofing Manual.
  - b. All seams and terminations shall be sealed.
- 303.4 Roof Insulation:
  - a. Install and fasten insulation according to the roofing system manufacturer's instruction, the NRCA Roofing and Waterproofing Manual and Factory Mutual construction data sheets.
  - b. Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.
  - c. Insulation shall be fit tightly, with gaps not greater than 1/4". All gaps greater than 1/4" shall be filled with acceptable insulation. Under no circumstances shall the roofing membrane be left unsupported over a space greater than 1/4". Miter roof insulation edges at ridge, valley and other similar non-planar conditions.
  - d. Tapered insulation shall be installed where indicated on the Design Drawings for roof deck sloping, around roof drains, for roof low side saddles and for high side large curb crickets to provide proper slope for drainage and to prevent ponding.
  - e. When installing multiple layers of insulation, all joints between layers shall be staggered at least 6 inches.
- 303.5 Roof Membrane: Install the fully-adhered membrane in strict accordance with the roof manufacturer's printed instructions for the roof system specified.
- 303.6 Flashing:
  - a. Install perimeter, opening, roof drain, scupper and penetration flashing as indicated on the design drawings, in strict accordance with the roof manufacturer's printed instructions, and conforming to the SMACNA Architectural Sheet Metal Manual.
  - b. CONTRACTOR shall enclose all penetrations to weather tight conditions
- 303.7 Roof Walkways: Install walkways at all access points to the roof and for paths to and around all rooftop equipment that requires frequent maintenance and as shown on roof drawings following the roof manufacturer's printed instructions.
- 304. DAMAGED MATERIALS AND CLEANING
- 304.1 CONTRACTOR shall protect completed work from abuse and repair any damage that occurs after the roofing system is in place.
- 304.2 Correct identified defects or irregularities.
- 304.3 Clean all contaminants from building and surrounding areas.

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- 304.4 Repair or replace damaged building components or surrounding areas to the satisfaction of the DISTRICT.
305. INSPECTION AND TESTING
- 305.1 All inspection and testing requirements shall be followed in accordance with Section 074144.

END OF SECTION 075324

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